Bell and Corno di Toro Pepper Variety Trials - 2019

Instructions for On-Farm Sites across Canada

Project Context

Thank you for participating in the Canadian Organic Vegetable Improvement (CANOVI). This project is a collaboration between the Centre for Sustainable Food Systems at the University of British Columbia and the Bauta Family Initiative on Canadian Seed Security at USC Canada. One of the goals of this project is to create a national network and platform where existing varieties and new breeding lines can be evaluated for their performance in a range of regional organic and ecological farming conditions through on-farm variety trials.

Varieties that are sold to organic and ecological farmers in Canada have not necessarily been trialed on sites that reflect the diversity of Canadian farming conditions. Through a co-ordinated trialing network across Canada and integration with partners networks in Canada and the United States, we can gather information about both existing varieties and new breeding lines under organic management and across a range of farming conditions.

The information gathered through this trial network will be used to help farmers:

- Identify the best-performing varieties in your region, both for market garden production and seed production
- Identify which varieties would be suitable as parents for future regional breeding projects
- Build the capacity of farmers to conduct on-farm variety trials useful for their farming operation

For any questions you may have about the variety trials, please contact the regional coordinator for the Bauta Family Initiative on Canadian Seed Security (seedsecurity.ca) for your region:

- Atlantic Canada: Steph Hughes, USC Canada, shughes@usc-canada.org
- Quebec: Hugo Martorell, USC Canada, hmartorell@usc-canada.org
- Ontario: Rebecca Ivanoff, Ecological Farmers Association of Ontario, rebecca@efao.ca
- Prairies: Iris Vaisman, Organic Alberta, iris.vaisman@prairieorganicgrain.org
- British Columbia: Chris Thoreau, chris@farmfolkcityfolk.ca

You may also contact one of the CANOVI researchers:

- Alex Lyon, UBC Centre for Sustainable Food Sytems, CANOVI Lead Researcher; alexandra.lyon@ubc.ca; 604.710.2096
- Helen Jensen, Bauta Initiative Research Manager; hjensen@usc-canada.org; 514-433-8445

Peppers for trialing

Two market classes of peppers (*Capsicum annuum*) will be trialed in 2019.

- Corno di Toro (aka Corno) peppers (up to 9 varieties):sweet, elongated types also known as roasting, frying, or *shepherd* peppers)
- Bell peppers (5 varieties)

For each market class, the trial includes mostly red varieties with some yellow and or/orange varieties. The varieties include hybrid (F1) varieties and open-pollinated varieties.

The varieties sent to farmers for each market class will be either "core" varieties, that all participants should plant or "optional" varieties that individual farmers can chose to add to the trial. Seed for both the core and optional varieties will be sent, and farmers can choose to add them to their trial. This smaller "core set" with additional "optional" varieties iis in response to feedback from some farmers that they would like to have fewer varieties to trial. The "optional" varieties are to accommodate those who would like to trial more.

Growers may also chose to **add additional varieties of their own choice to their trial** to make it more useful for their specific farm. Farmers will need to source their own seeds for any additional varieties they wish to add.

Your seed pack sheet will list the varieties included for your farm, with both "code names" and real variety names. If you wish to do a "blind" trial, please label your plants and plots using the codes only. This helps remove any bias you may have associated with the variety names, seed sources, etc. You will need to refer to the real variety names to enter data in the online SeedLinked platform, discussed later.

Full Variety Lists for 2019

2019 Corno Peppers

Code	Variety	Trial category	Type	Source	Certification
PC-01	Joelene	Optional	OP	UBC Farm	Organic
PC-02	Carmen	Core (**Check**)	F1	Johnny's	Organic
PC-06	Golden Treasure	Optional	OP	Salt Spring Seeds	Untreated
PC-07	Lively Yellow	Core	OP	High Mowing	Organic
PC-08	Karma	Core	OP	Wild Garden Seeds	Organic
PC-09	Early Perfect Italian	Core	OP	Wild Garden Seeds	Organic
PC-10	Gypsy Queens	Core	OP	Adaptive Seeds	Organic
PC-11	Stocky Golden Roaster	Optional	OP	Wild Garden Seeds	Organic
PC-12	Stocky Red Roaster	Optional	OP	Wild Garden Seeds	Organic

2019 Bell Peppers

Code	Variety	Trial category	Type	Source	Certification
PB-04	Ace	Core (**Check**)	F1	Johnny's	Untreated
PB-05	King of the North	Core	OP	High Mowing	Organic
PB-06	Early Red Sweet	Core	OP	Turtle Tree	Organic & biodynamic
PB-07	Peace Work	Core	OP	Fruition	Organic
PB-08	Orange marmalade (SBGO 10408)	Core	F1	Pan American Seeds/Ball	Untreated

Planting and Cultivation Recommendations

The table below provides *suggestions only f*or trial implementation. **The trial should be grown as you would normally grow peppers, including your normal bed and row spacing - the purpose of on-farm trials, is to test them on your farm!**

Seeding and transplant dates	● Seed in greenhouse 6-8 weeks before last frost (average early-April) ● Transplant after last frost (average mid-June) ● Seeding and transplant dates should be adjusted depending on weather conditions and your normal dates for peppers ● 50/72 cell plug trays are standard sizes ● Seed in cell trays, flats, soil blocks, or nursery beds as you wish. ● Growers will receive 20 seeds per rep per variety, start all 20 to account for losses in germination
Plants per Variety	● 12 plants per variety per replication ● Replications: 1 or 2
Row and bed spacing	● 18” in-row spacing ● 36 - 72” center-to-center bed spacing, or whatever bed spacing your normally use ● You may choose to plant 2 rows per bed ● **Adjust spacing accordingly based on your planting regime, the more space you give, the more you can optimize yield and disease pressure**
Other planting specifications	● Black plastic is preferred, but not required ● Row covers or hoophouses can be used to buffer against cold and increase earliness ● Drip irrigation is highly recommended

	● Trellising peppers is recommended to prevent lodging from heavy fruit load
Harvesting instructions	● Fruits for evaluation should be harvested from 10 plants per plot (excluding the two plants at the edges of each rep) ● Harvest peppers as you normally would and market them as desired. ● Harvest evaluation should be done one time, when all varieties are near peak maturity.

How to Arrange the Trial

Please **seed peppers as soon as possible** using whatever methods you would normally use for starting pepper seeds. **Record your sowing date, and report it to your trial regional coordinator** (see contact information on the first page of this form).

You may choose to do 1 or 2 replications of the trial (i.e. 1 or 2 plots of each variety), depending on your available space. Two replications will give you more confidence about your observations on your own farm, as you will be able to better account for the effects of field variation. However, with 1 replication you will still be able to contribute to a network of results providing reliable information about variety performance. If you plant 1 replication, please still plant 2 plots of the check variety to have a sense of the variation in your field.

- **If you will be planting 2 replications** (2 plots) of each variety, sow enough seed to end up with at least 24 transplants of each variety.
- **If you will be planting 1 replication** (1 plot) of each variety, sow enough seed for at least 12 transplants of each variety and at least 24 transplants of the check variety (Ace for bell peppers, Carmen for corno peppers).
- Please make your own planting labels to ensure varieties don't get mixed up.

If you have any questions, including questions about growing fewer varieties or adding additional varieties, please contact your regional coordinator and/or Helen Jensen.
We strongly encourage growers read On-Farm Variety Trials by the Organic Seed Alliance - an incredible how-to-guide on how to implement variety trials for your own farm.

Please observe the layouts below as a examples of how you can organize your trial:

B*ell Pepper Trial Example with 1 replicate :*

<u>Please randomize the planting of varieties *within the replication*</u>

Border		
Border	PB-06/Early Red Sweet	**Border**
	PB-08/Orange marmalade (SBGO 10408)	
	PB-04/Ace*	
	PB-07/Peace Work	
	PB-05/King of the North	
	PB-04/Ace*	
Border		

Bell Pepper Trial Example with 2 replicates :

<u>Please randomize the planting of varieties *within each replication*</u>

Border			
Border	**Replication 1**	**Replication 2**	**Border**
	PB-06/Early Red Sweet	PB-08/Orange marmalade (SBGO 10408)	
	PB-04/Ace*	PB-07/Peace Work	
	PB-05/King of the North	PB-06/Early Red Sweet	
	PB-08/Orange marmalade (SBGO 10408)	PB-05/King of the North	
	PB-07/Peace Work	PB-04/Ace*	
Border			

Please observe these best practices to the extent possible:

- A border around your trial of buffer crops not included in your trial is recommended to prevent crop loss from mechanical damage or pests/critters. The crops that make up the border can be other varieties peppers, or other types of crops.
- Avoid the edge of the field and the end of the bed when finding a place for the trial, as well as any areas with known soil, shade or irrigation differences that would affect some plots more than others.
- If possible, plant the trial in a spot where it has the same crop on either side of it.
- Use stakes provided to label the plots AND draw a field map showing the order and location of varieties. This serves as a backup in case the stakes get lost!

Evaluation

Ultimately, the purpose of gathering data for the trial is to answer these three questions:

1. Does this pepper variety work well on your farm?
2. Is it a suitable candidate for on-farm seed production?
3. Is it a suitable candidate for future breeding projects?

Data will be collected in a systematic way to help answer those questions. Evaluation forms are still being finalized for the trial and will be provided shortly after farmers receive seed for the trial. The evaluation forms will be quite simple, requesting farmers to evaluate the following information throughout the trial:

- Would you grow this variety again?
- How marketable is this variety?
- Please rate the flavour and productivity of the variety
- Are there any disease/insect/stress problems related to the variety?

This year, we are going to pilot an online platform for data collection called “Seedlinked”. This platform should make the final results of the trials accessible to famers faster. You will also have the option to collect your data on a paper evaluation form. We will have a webinar to orient participants to the use of “Seedlinked” for data entry.

Growers will also be asked to make note of:

- Soil type
- Prior crop to planting
- Planting method
- Planting dates
- In-row/between-row spacing
- Mulch used
- Fertilizer applied
- Pest/disease treatments
- Trellising methods used

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